Fastening device for a snowboard brake

The present invention concerns a fastening device for a snowboard brake.

The normal method of preventing a snowboard from running away when the user takes it off is to fasten it with a strap. A disadvantage in using a strap is that it can fasten to protruding objects in the snow and that riders think it is difficult to use. Previously known are also brakes that can be operated with the rider's foot and are activated when the rider takes it off. A normal method of fastening is to screw the brake device to the snowboard, either between the bindings or under one of the bindings. One disadvantage with this type of brake device is that its position is fixed and cannot be adjusted. This means the brake device will not move when necessary and may damage the snowboard if the brake is mounted on the snowboard. Brakes that are integrated in the bindings are also known. The disadvantage with this type is that the rotation of the bindings is limited in relation to the longitudinal axis of the snowboard and that individual choice of brake location is not possible without modifying the position of the bindings. Another disadvantage is that in some cases the bindings can break away from the snowboard, which means that the function of a brake integrated with the binding loses its effect and the snowboard can still run away down the hill.

The position of the brake device may need adjustment for example when the rider wishes to adjust the foot angle and thereby the binding angle in relation to the longitudinal axis of the snowboard. This means that the position of the brake must also be adjusted as it is operated by one foot. Another example is where rental snowboards are available and many different riders will be using the same snowboard and a number of different brake positions will be required. A degree of simplicity when adjusting snowboard equipment, such as bindings and brakes, is necessary as it must be done in as short a time as possible and in a simple and flexible manner.

One object with the present invention is to achieve a fastening device for a removable brake device on a snowboard, which is easy to use and mount, and eases or completely remedies the aforesaid disadvantages. Another object is to achieve a fastening device that is cost-efficient and simple in design.

These objects are attained with a fastening device exhibiting the characteristics specified in claim 1.

The invention is described more fully in the following with reference to the attached drawings, which illustrate examples of selected embodiments, where

fig 1 shows one embodiment of a fastening device in accordance with the invention,

fig 2 shows a cross-section along the line II-II of a groove machined into the snowboard,

fig 3 shows a detailed view of a locking washer,

fig 4 shows an enlargement of a fastening device according to figure 1,

fig 5 shows an alternative embodiment,

fig 6 shows an enlargement of an embodiment according to figure 5,

fig 7 shows a detailed view of a locking washer,

fig 8 shows a cross-section along the line VIII -VIII of the groove according to figure 5 and the brake device mounted in the groove,

fig 9 shows another alternative embodiment,

fig 10 shows an enlargement of an embodiment according to figure 9,

fig 11 and 12 showed enlargements of a locking sleeve and a locking washer,

fig 13 shows another embodiment,

fig 14 shows a detailed enlargement of an embodiment according to figure 13 and

fig 15 and 16 shows a cross-section of the strip and the groove according to figure 14.

A snowboard 1 is designed with two short sides and two long sides 2, 2'. On the snowboard 1 is one binding 3 for each foot. The bindings 3 are usually arranged more or less transverse to the longitudinal axis of the snowboard 1 at a suitable distance from each other. This position means the rider is facing to one side of the snowboard 1 instead of straight ahead as is the case with normal skiing. The bindings 3 are also designed so that the rider can rotate the binding 3 in relation to the longitudinal axis of the snowboard 1. This is so that it is possible to obtain an individual angle for the feet in relation to the angle of attack of the snowboard 1 to the gradient of the hill. The brake 4 must be moved forward or back depending on the degree of rotation of the binding 3.

In one embodiment, as shown in figure 1, a movement of this type is possible through the arrangement to the snowboard 1 of a guide in the form of a groove 5 in which part of the brake device 4 is mounted. The groove 5, as shown in figure 2, extending at least past the whole length of the front binding 3, is made by means of milling or other suitable method in the snowboard 1 and has a T-shaped cross-section opening into the top of the snowboard. In at least one end of the opening, as shown in figure 4, is arranged a widening 7 slightly larger than the width of the groove 5 to receive a means of locking in the form of a locking washer 8, 8' described in the following text.

The brake device 4 comprises a base section 11 with a pair of rotatable locking washers 8, 8' with protruding catches as shown in figure 3. The locking washers 8, 8' are T-shaped with a shaft 12 arranged to the base section 11 and positioned at its front and rear part pointing down. At the lower part of the shaft 12 is arranged a pair of protruding catches in the form of locking pins 30 intended to interact with the groove 5. The part of the shaft 12, i.e. the part of the locking washers 8, 8' opening into the top of the base section 11,

comprises a groove 14 for a screwdriver. When mounting the brake device 4 to the snowboard 1, the locking washers 8, 8' are turned to a position where the locking pins 13 are parallel to the groove 5 opening. The brake device 4 is moved down towards the snowboard 1 so that the locking washers 8, 8' run inside the groove 5. After this, the brake device 4 slides in the direction of the arrow shown in figure 4 along the groove 5 to the intended position, after which the locking washers 8, 8' are rotated one quarter of a turn, i.e. 90 degrees. With the locking washers 8, 8' in this position, the locking pins 13 will lock the brake device 4 base section 11 in the groove 5 on the snowboard 1.

In another embodiment, as shown in figure 5, the guide is designed as a strip 9 glued or in some other way fastened to the top 6 of the snowboard 1. The strip 9 is made of an elastic material, such as thin metal, composite or a type of plastic, to follow the movement of the snowboard 1 when in use and with a cross-section in the shape of a cut down cone with its wider base turned towards the bottom of the snowboard 1, walls directed obliquely upwards, and its narrow opening face up. With the strip 9 fastened to the top of the snowboard 1, a groove 9' as shown in figure 8 is obtained extending past at least the full length of the front binding 3. The position of the guide is determined by the appearance of the brake device 4. Usually, the guide is arranged to one long side of the snowboard 1 that it should be understood that the guide can be arranged in any position on the snowboard 1, as long as the brake heel 10 of the brake device 4 when unfolded extends outside the side 2, 2' of the snowboard 1 and when folded in does not obstruct the use of the snowboard.

The locking washer 8, 8', as shown in figure 7, is designed with a head 15 with a similar cone shaped cross-section as the strip 9. When mounting the brake device 4, the head 15, as shown in figure 6, is inserted into the openings at the ends of the strip 9, the brake device 4 slides along the strip 9 to the desired position and is locked in place with a screw 16 arranged on the top of the locking washer 8, 8'. By turning the screw 16, the head is pressed up against the vertical walls of the strip 9, while the base section 11 of the brake device 4 is pressed against the snowboard 1, fixing the brake device 4.

In another alternative embodiment, as shown in figure 9, the top of the snowboard 1 is arranged with a mounting part in the form of threaded inserts 17 on each side of the binding 3, viewed along its length and breadth. In these threaded inserts 17 are screwed guides in the form of locking washers the 8, 8' with an appearance shown in figure 12 but with the locking pins 13 parallel to the length of the snowboard 1. The base section 11 of the brake device 4 comprises a continuous through groove 18 as shown in figure 10. In the groove 18 is arranged a pair are rotatable locking sleeves 19 that run freely along the length of the said groove 18.

As shown in figure 11, the locking sleeves 19 are arranged with a groove along the length of the inside periphery of the locking sleeve 19 and running in a spiral from the

bottom and up and finishing in a depression with a shape corresponding to the shape of the locking pins 30. The brake device 4 groove 18 and sleeves 19 are positioned to the locking washers 8, 8', moved to the desired position and pressed down against the snowboard 1. Subsequently, the sleeves 19 are rotated one quarter of a turn, i.e. 90°. During this rotation, the locking washer 8, 8' locking pins 13 follow in the spiral grooves in the sleeves. The spiral shape of the groove means that the brake device 4 is pressed against the top of the snowboard 1 and the brake device 4 is locked with the locking washer 8, 8' locking pins 13 resting inside the depression in the sleeves 19.

In another embodiment, as shown in figure 13, the top of the snowboard 1 is arranged with a guide in the form of a runner 21 with an I-shaped cross-section, i.e. with a vertical centre 23 with a lower and upper end shaped as horizontal sections 22, 22' extending outside the confining sides of the centre 23 as shown in figure 15. The runner 21 is made of an elastic material, such as thin metal, composite or a type of plastic, in order to follow the bending of the snowboard 1 that occurs in use and extends past at least the full length of the front binding 3. The lower horizontal part 22 of the runner 21 is glued or in some other way fastened to the snowboard 1, and the upper horizontal part 22' of the runner 21 is intended to fit into a continuous groove 24 arranged to the base section 11 of the brake device 4, which has been given a corresponding I-shaped cross-section as shown in figure 16.

When mounting the brake device, one end of the groove 24 on the base section 11 of the brake device 4 is positioned to the end of the runner 21, after which the brake device 4 slides along the runner 21 in the direction of the arrow as shown in figure 14 to the desired position. Then, the brake device 4 is locked with the locking screw 25 arranged on the base section 11 that when rotated locks the brake device 4 to the runner 21.

The different embodiments described above can be varied in several different ways. Important with respect to the design of the guide and the means of locking is that they are designed so that the locking means has a shape that corresponds with the guide and which allows an adjustable fitting of one inside the other, between end positions extending past at least the entire length of the front binding 3, irrespective of whether the guide is arranged in the snowboard 1 or in the base section 11 of the brake device 4 and, after the brake device 4 has been given the desired position, the possibility of locking it effectively.

The present invention is not limited to the above description and as illustrated in the drawings but can be changed and modified in a number of different ways within the framework of the idea of invention specified in the following claims.